

Listing of the claims

1. (Original) A method for assigning priority to streams of compressed video data, comprising the steps of:
 - determining a relative importance of each macroblock in a video frame based on how often each macroblock acts as a reference macroblock; and
 - prioritizing each of the macroblocks in the video frame based on the relative importance.
2. (Original) The method of claim 1, wherein the determining step includes the steps of:
 - reading a current P frame; and
 - examining motion vectors from previous and subsequent B frames, and from a subsequent P frame if it exists, to determine how often each macroblock in the current P frame acts as a reference macroblock for target macroblocks in the B and P frames.
3. (Original) The method of claim 2, wherein the determining step comprises the further step of determining how often target macroblocks in the subsequent P frame act as reference macroblocks.
4. (Original) The method of claim 1, wherein the determining step includes the steps of:
 - reading a current I frame; and
 - examining motion vectors from previous and subsequent B frames, and from a subsequent P frame, to determine how often each macroblock in the current I frame acts as a reference macroblock for target macroblocks in the B and P frames.

5. (Original) The method of claim 4, wherein the determining step comprises the further step of determining how often target macroblocks in the subsequent P frame act as reference macroblocks.

6. (Original) The method of claim 1, comprising the further steps of:

assigning B frame data a lowest relative priority;

assigning P frame data a priority relatively higher than B frame data; and

assigning I frame data a priority relatively higher than P frame data.

7. (Original) The method of claim 1, wherein if a current macroblock acts as a partial reference macroblock, implementing the steps of:

determining an amount of pixel overlap between the current macroblock and a corresponding reference macroblock; and

scaling the relative importance of the current macroblock based on the amount of pixel overlap.

8. (Original) The method of claim 1, comprising the further step of assigning each macroblock into one of a plurality of streams based on the prioritization step.

9. (Original) The method of claim 1, wherein the relative importance of each macroblock is further determined based on values of a plurality of residual discrete cosine transform (DCT) coefficients of the macroblock.

10. (Original) A method for assigning priority to streams of compressed video data, comprising the steps of:

determining an importance value for each macroblock in a plurality of video frames based on how often each macroblock acts as a reference macroblock;
grouping macroblocks into sets of macroblocks, and combining the importance values of the macroblocks within each set; and
prioritizing each set of macroblocks based on the combined importance values.

11. (Original) The method of claim 10, wherein each set of macroblocks comprises a complete frame of video data.

12. (Original) The method of claim 10, wherein the determining step includes the steps of:

reading a current P frame; and
examining motion vectors from previous and subsequent B frames, and from a subsequent P frame if it exists, to determine how often each macroblock in the current P frame acts as a reference macroblock.

13. (Original) The method of claim 10, wherein the determining step includes the steps of:

reading a current I frame; and

examining motion vectors from previous and subsequent B frames, and from a subsequent P frame, to determine how often each macroblock in the current I frame acts as a reference macroblock.

14. (Original) The method of claim 10, wherein each set of macroblocks comprises a group of pictures.

15. (Original) The method of claim 10, wherein if a current macroblock acts as a partial reference block, implementing the steps of:

determining an amount of pixel overlap between the current macroblock and a corresponding reference macroblock; and

scaling the relative importance of the current macroblock based on the amount of pixel overlap.

16. (Original) The method of claim 10, wherein the importance value of each macroblock is further determined based on values of a plurality of residual discrete cosine transform (DCT) coefficients of the macroblock.

17. (Original) A system for encoding streams of compressed video data, comprising:
- an importance analysis system for determining an importance value for each macroblock in a video frame based on how often each macroblock acts as a reference macroblock; and
 - a system for prioritizing each of the macroblocks in the video frame based on the importance value determined for each macroblock.
18. (Original) The system of claim 17, wherein the importance analysis system includes a P frame analysis system that examines motion vectors from previous and subsequent B frames, and from a subsequent P frame if it exists, to determine how often each macroblock in a current P frame acts as a reference macroblock.
19. (Original) The system of claim 18, wherein the importance analysis system further comprises an indirect analysis system that determines how often macroblocks in the subsequent P frame are referenced by other video frames.
20. (Original) The system of claim 17, wherein the importance analysis system includes an I frame analysis system that examines motion vectors from previous and subsequent B frames, and from a subsequent P frame, to determine how often each macroblock in a current I frame acts as a reference macroblock.

21. (Original) The system of claim 20, wherein the importance analysis system further comprises an indirect analysis system that determines how often target macroblocks in the subsequent P frame act as reference macroblocks.

22. (Original) The system of claim 17, further comprising an error protection system that adds error protection to a stream of macroblock data based on a priority assigned to each macroblock.

23. (Original) The system of claim 22, further comprising a stream decoding system that decodes the streams of macroblock data back into a single stream of compressed data.

24. (Original) The system of claim 17, further comprising a partial macroblock analysis system that computes an overlap between a current macroblock and the reference macroblock and scales the importance value based on the overlap.

25. (Original) The system of claim 17, further comprising a residual analysis system that further determines the importance value of each macroblock based values of a plurality of residual discrete cosine transform (DCT) coefficients of the macroblock.

26. (Original) A system for prioritizing streams of compressed video data, comprising:
- a system for determining an importance value for each macroblock in a plurality of video frames based on how often each macroblock acts as a reference macroblock;
 - a system for grouping macroblocks into sets of macroblocks and combining the importance values for macroblocks in each set; and
 - a system for prioritizing sets of macroblocks based on the combined importance values.
27. (Original) The system of claim 26, wherein each set of macroblocks comprises a complete frame of video data.
28. (Original) The system of claim 26, wherein each set of macroblocks comprises a group of pictures.
29. (Original) The system of claim 26, further comprising a partial macroblock analysis system that computes an overlap between a current macroblock and the reference macroblock and scales the importance value based on the overlap.

30. (Original) The system of claim 26, further comprising a residual analysis system that further determines the importance value of each macroblock based on values of a plurality of residual discrete cosine transform (DCT) coefficients of the macroblock.

31. (Original) A decoder system for decoding multi-priority compressed video data, comprising:

- a system that correlates an error protection scheme to each of a plurality of data streams; and

- a system that interprets each data stream based on the error protection scheme;

- wherein the error protection scheme is determined by an prioritization system that prioritizes each data stream based on how often macroblocks act as reference macroblocks.

32. (Original) A program product stored on a recordable media, that when executed, prioritizes streams of compressed video data, the program product comprising:

- means for determining an importance value for macroblock data in video frames based on how often each of a plurality of macroblocks act as reference macroblocks; and

- means for prioritizing macroblock data based on the determined importance values.

33. (Original) The program product of claim 32, wherein the determining means comprises:

means for analyzing a current P frame by examining motion vectors from previous and subsequent B frames, and from a subsequent P frame if it exists, to determine how often each macroblock in the current P frame acts as a reference macroblock; and

means for analyzing a current I frame by examining motion vectors from previous and subsequent B frames, and from a subsequent P frame, to determine how often each macroblock in the current I frame acts as a reference macroblock.